

USAWC STRATEGY RESEARCH PROJECT

**EMPLOYMENT OF THE C-17 IN AIRDROP AND
AIRLAND OPERATIONS IN CLOSING THE FORCE**

by

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ABSTRACT

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The United States relies on the doctrine of rapid global mobility in support of national objectives in projecting power across strategic distances. On March 26, 2003, fifteen C-17As made history when they airdropped equipment and personnel on Bashur Airfield in Iraq with a follow on airland flow for the next four nights. There has been discussion beginning in the early 20th century on the utility of employing airdrop during combat operations. The purpose of this paper is four fold: first a review of the national strategy of the United States in the concept of rapid global mobility along with a review of air mobility operations; second a review of the capabilities of the C-17 employed during Operation Enduring Freedom and Operation Iraqi Freedom; third to review advantages and disadvantages of airland or airdrop operations based on the airdrop of the 173rd Airborne Brigade in Northern Iraq and the follow on airland flow; fourth recommendations for future operations based on OIF operations.

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PREFACE

I wanted to review airdrop and airland operations, since I had the opportunity to plan the insertion of the 173rd Airborne Brigade and was the lead pilot for the airdrop over Bashur. I felt this paper could use this operation to review the doctrine for rapid global mobility and air mobility operations and also review when a airdrop operation could be employed.

EMPLOYMENT OF THE C-17 AIRDROP AND AIRLAND OPERATIONS IN CLOSING THE FORCE

The United States relies on the doctrine of rapid global mobility in support of national objectives in projecting power across strategic distances. The C-17 is the core airlifter of the United States Air Force in supporting the strategy of rapid global mobility for the Combatant Commanders.

On March 26, 2003, fifteen C-17As made history when they airdropped equipment and personnel on Bashur Airfield in Iraq with a follow on airland flow for the next four nights. There has been discussion beginning in the early 20th century on the utility of employing airdrop during combat operations. The purpose of this paper is four fold: first a review of the national strategy of the United States in the concept of rapid global mobility along with a review of air mobility operations; second a review of the capabilities of the C-17 employed during Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF); third to review advantages and disadvantages of airland or airdrop operations based on the airdrop of the 173rd Airborne Brigade in Northern Iraq and the follow on airland flow; fourth recommendations for future operations based on OIF operations.

STRATEGIC GUIDANCE FOR RAPID GLOBAL MOBILITY

With the winning of the cold war, the United States has embarked on a policy of rapid global mobility for the deployment of forces from the Continental United States (CONUS). Rapid deployment of forces includes fast surface ships, prepositioned equipment on land and sea and the airlift of forces. President Bush stated in The National Security Strategy, the U.S. will "continue to transform our military forces to ensure our ability to conduct rapid and precise operations to achieve decisive results."¹ Not only must the United States have the capability for rapid global mobility, but "NATO must build a capability to field, at short notice, highly mobile, specially trained forces whenever they are needed."² No other country in the world has the capability to deploy forces over long distances, and just the flag on an airlifter from the United States shows the commitment of the United States. "The presence of American forces overseas is one of the most profound symbols of the United States commitments...the long distance deployment of U.S. forces."³ President Bush references operating in Afghanistan, "We must prepare for more such deployments by developing assets such as advanced remote sensing, long-range precision strike capabilities, and transformed maneuver and expeditionary forces."⁴ One of the problems the United States military force encounters, as the force becomes more expeditionary from the CONUS, is the ability of airlift forces to transport combat forces long distances. In the case of Afghanistan, the main operating base whether for airdrop or airland

operations was in Germany and the flying time to Afghanistan was seven hours. There are many problems to overcome such as, diplomatic clearances from multiple countries friend and former foe, and fuel is also required whether from other aircraft or other operating bases as well to name two.

From the Quadrennial Defense Review, "Provide sufficient mobility, including airlift, sealift, prepositioning, basing infrastructure, alternative points of debarkation, and new logistical concepts of operations, to conduct expeditionary operations in distant theaters against adversaries armed with weapons of mass destruction and other means to deny access to United States forces."⁵ "A comprehensive analysis of all requirements must be completed and appropriate priority of resources established. As for strategic lift, we must aggressively achieve the capabilities called for in the Mobility Requirements Study 2005, as a minimum."⁶

The National Military Strategy states that, "Agility is the ability to rapidly deploy, employ, sustain and redeploy capabilities in geographically separated and environmentally diverse regions."⁷ "Such power projection requires assured access to theaters of operation and enhanced expeditionary capabilities that support operational maneuver from strategic distances."⁸ "Enhancing United States overseas presence and global footprint must improve the ability of regional forces to employ an expeditionary approach in response to regional and global contingencies... enable rapid operations and allow forces to respond with greater speed than in the past."⁹ This during the time that United States forces will be also moving back to the CONUS and the overseas presence of United States forces is being reduced.

Admiral Cebrowski states, "I believe the future of warfare belongs to forces that are smaller, faster, and more numerous."¹⁰ Admiral Cebrowski also states that future warfare will be based on speed, and the ability to "act faster than our opponent allows us to define or alter the initial conditions."¹¹ Only the forces that respond with speed will be effective, and speed of deployment and employment is one part of the speed equation.¹² Chief of Naval Operations, Admiral Vern Clark stated, "battles of the future will be about speed, agility and precision."¹³ This is an interesting point that forces that respond with speed can alter or define the initial conditions, and pick the place and order of battle.

The United States Air Force (USAF) transformation plan includes global mobility as one of the tenants. The Global Mobility Task Force (GMTF) provides for rapid global mobility, for contingency response, humanitarian relief, and evacuation operations. This will include movement of combat forces.¹⁴ "Quick, effective response to any crisis/contingency mitigates instabilities, reduce adversaries' time to mobilize threats, reduce casualties to United States and allied forces, and limit suffering."¹⁵ "The GMTF CONOPS supports the national strategy of

engagement through global power projection across the full spectrum of operations, from global strike, to Humanitarian Relief Operations/Non-Combatant Evacuation Operations.”¹⁶

The Mobility Requirements Study 2005 (MRS-05) identified that 54.5 Million Ton Miles per Day (MTM/D) was the airlift requirement and some scenarios had a requirement of 67 MTM/D, but the joint staff and theatre commanders agreed to assume minimum moderate risk and 54.5 MTM/D could support the National Military Strategy. The current airlift force provides only 44.7 MTM/D.¹⁷ During OIF and OEF, over 1.3 million passengers and 3.4 million short tons of cargo have been moved back and forth between the CONUS., Europe, Afghanistan and Iraq since 11 September 2001.¹⁸ As of September 10, 2004, AMC has flown 34,030 missions, with 1,771,632 troops and 1,059,498 tons of cargo moved in support of OEF and OIF.¹⁹

A new mobility study will be released in the Spring of 2005, the Mobility Capability Study, since the MRS-05 did not envision September 11, 2001, the Global War On Terror, the standup of U.S. Northern Command, the Department of Homeland security and the airlift requirements in MRS-05 did not take into account these events. The new study will establish a baseline for air, land, and sea capability requirement. MRS-05 identified the need for 222 C-17s, but the USAF has funded only 180 C-17s.

AIR MOBILITY OPERATIONS

“Air mobility enables commanders to simultaneously exploit mass, maneuver, and surprise and operate at the strategic, operational and tactical levels of war.”²⁰ Airlift allows forces to conduct operations by transporting personnel and equipment in support of strategic, operational and tactical operations and to deliver the personnel and equipment by airland or airdrop.²¹ There are two types of airlift delivery methods: airland or airdrop. The choice of delivery method depends on availability of airfields, security of airfields, landing zone (LZ), drop zone (DZ) and aircraft capability.²² Airland operations is the most common delivery method. Normally heavier loads can be delivered by airland and usually with less damage than airdrop operations. Airland operations require a secure airfield to land and takeoff from. Normally some type of Material Handling Equipment (MHE) is required to offload equipment from aircraft. Airdrop operations is the delivery of equipment or personnel from airborne aircraft by a variety of methods. Airdrop allows the commander to capitalize on the element of surprise by delivery of forces at almost any location and does not require an airfield.²³

Army manual FM 4-20.41 summarizes the advantages and disadvantages of airdrop and airland delivery.

“2-23. Advantages of airdrop delivery include:

- Airdrop can be used when no other means for transporting supplies or equipment is available.

- Airdrop permits throughput of supplies from the corps and theater areas, and from the national level directly to the using unit, whether or not the unit is located in an isolated area.

- Airdrop reduces the need for forward airfields, landing zones (LZs), and materiel handling equipment (MHE), reducing the battlefield footprint.

- Airdrop permits greater dispersion of ground tactical forces.

- Airdrop reduces in-transit time and handling requirements from the source of supply to the ultimate user.

- Airdrop, as opposed to airland, enables a shorter turnaround time for non-landing aircraft, and reduces risks to the aircraft, increasing aircraft availability.

2-24. Advantages of airland include:

- Airland allows equipment that is not air-droppable, such as tanks, some artillery, and helicopters, to be brought rapidly in-theater.

- Airland allows a greater degree of tactical integrity and the capability to rapidly employ units after landing.

- Airland exposes deploying personnel and equipment to less risk of injury or damage.

- Airland does not require specially trained personnel to prepare supplies for delivery.

- Airland permits the maximum utilization of aircraft loads (ACLs) by eliminating the volume and weight of preparing loads for airdrop deliveries.

- Airland allows aircraft to be used for backhaul or evacuation of personnel.

- Airland has a low cost per ton of cargo moved ratio.”²⁴

“2-26. Disadvantages of airdrop include:

- Airdrop leaves aircraft vulnerable to enemy air defense systems.

- Airdrop allows no backhaul capability.

- Airdrop creates a need to recover and retrograde airdrop equipment.

- Airdrop net payload is reduced because of the relatively heavy weight of the airdrop rigging equipment.

- Airdrop requires specially trained Army rigging personnel and Air Force flight crews.

- Airdrop DZs must be secured to prevent supplies from falling into enemy hands.

- Airdrop with the current available equipment is dependent on favorable wind conditions.

- Airdrop operations require an extensive planning effort and much longer cycle times.

2-27. Disadvantages of airland include:

- Airland requires moderately level, unobstructed LZs.
- Airland requires more time for delivery of a given size force than when delivery is by parachute, especially for a small, restricted LZ.
- Airland requires more support personnel and MHE.
- Airland exposes aircraft to prolonged air and ground attack because of the extended time on the ground at forward airfields.
- Airland requires more engineer assets to maintain the airfield."²⁵

C-17 CAPABILITIES

The C-17 is the core airlifter for the United States Air Force. The aircraft was designed to operate into austere airfields with runways only 3,500 feet in length and deliver outsize cargo loads up to 170,900 pounds, and specifically the M-1A Abrams main battle tank. The C-17 capabilities include: operations into semi prepared airfields; backing under its own power, therefore removing the requirement of a tow bar and tug; air refuelable; deliver personnel or cargo by airdrop.

The C-17 design capitalized on new technology with automation for a reduced basic crew of two pilots and one loadmaster to perform all peacetime and combat operations. With the short field capability, air refueling, and austere operations the C-17 can deliver from CONUS to a combatant commander anywhere in world. The C-17 is completely night vision goggle capable with a flip of a switch all white lighting is removed.

Station Keeping Equipment (SKE) permits the aircraft to fly in formation in any weather and conduct formation aerial refueling. SKE also allows the aircraft to fly in formation for airland or airdrop operations.

With the onboard mission computer and inertial reference units updated by global positioning system (GPS) a GPS approach can be developed for any airfield in the world.

Austere airfield and assault zone operations are limited by the throughput of ground handling equipment. If an aeromedical evacuation is required all of the equipment is prepositioned on the plane. At an austere location the aircraft can back under its own power. Combat offloads can be performed, where the load is dropped over the ramp of the plane. Engine running off-load and on-load can be safely performed, there are not any propellers to create a safety hazard and with the engines in reverse, since the thrust is directed upward that ground personnel can safely work behind the aircraft. The C-17 has been used as a Forward Air Refueling Point when excess fuel has been downloaded from the aircraft into tanks at an austere field.

With the mission computer and threat areas loaded into the navigational data base the C-17 can perform numerous tactical approaches and with the capability to use in flight reverse thrust, descent rates of 14,000 feet per minute are obtained. Extend range fuel tanks, on newer aircraft, have provided an extra 65,544 pounds of JP-8 fuel that can extend the range or be offloaded at down range locations.

C-17 AIRDROP EMPLOYMENT IN AFGHANISTAN AND IRAQ

The Humanitarian Daily Ration (HDR) airdrops in Afghanistan add historical background to C-17 airdrop operations. Airdrop has added a new dimension for the Combatant Commander to employ, and supports the strategy of rapid global mobility. In Afghanistan the C-17 dropped food bundles and Container Delivery System (CDS) loads from high altitude, and in Iraq ten C-17s dropped personnel and five C-17s dropped heavy equipment platforms to open the northern front in Iraq. The first night airdrop was employed to mass forces into a location of Bashur, Iraq. During that drop, 1,000 jumpers were delivered and during the next four nights, an additional 1,015 personnel were delivered and 3,000 short tons of cargo.

When the decision to provide humanitarian rations to the people of Afghanistan, there were fundamental problems: Afghanistan is a landlocked country; Afghanistan is a mountainous country; Afghanistan was a country at war. There were long distances to fly, the operation was based out of Ramstein AB, Germany and the flying time to the drop zone was approximately seven hours, and would normally include two air refuelings. The drops were from high altitude that would require the crews to pre breath oxygen to prevent physiological incidents.

The airdrops were flown from October through December 2001 and were very successful with 200 Missions and over 2,544 flight hours. There were 132 Triwall Aerial Delivery System (TRIADS) and 68 CDS missions. The missions delivered: 541 HDR bundles, which is much like a CDS bundle; 604 wheat and blanket bundles ; 268 cold weather bundles. The missions delivered over 2.4 million HDRs delivered. Unprecedented accomplishments: 1st C-17 Combat Airdrop; Highest C-17 Airdrop ever; 1st TRIADS Operational Mission; 1st Use of night vision goggles within a C-17A formation airdrop; Longest continuous C-17 sortie. This mission was unique that it began on the first evening of combat operations in Afghanistan, and the United States was also providing humanitarian support.

AIRDROP AND AIRLAND OF THE 173RD AIRBORNE BRIGADE 26 MARCH 2003

When the 4th Infantry Division was stuck in Turkey due to Turkish Government preventing the launching of offensive operations into Iraq from Turkey, the mission fell to the 173rd Airborne

Brigade stationed in Vicenza, Italy. The United States wanted to open a northern front in Iraq to fix the Republican Guard north of Baghdad to prevent the reinforcement of Iraqi forces in Southern Iraq, secure the northern oil fields and show the United States resolve and capability to deliver a combat force anywhere at anytime.

The northern front in Iraq was opened entirely by aerial delivery. This was the first C-17 combat personnel airdrop and included the largest C-17 formation ever. This included the largest nighttime single-pass drop since D-Day. This operation assembled a complete brigade in just five days with 62 C-17 sorties.

At Bashur airfield there were requirements established to employ airdrop: Hostile ground-air activity suppressed; develop tactics to defeat small arm and Man Portable Air Defense threats, including night high altitude routing, with a steep descent to the DZ. This was to minimize exposure to the threat. The personnel aircraft had to air refuel after the drop. In coordination with combined and joint forces, a sterile ten-mile long corridor and six mile wide corridor had to be secured. A combat air force support package would be available from the Joint Forces Air Component Commander (JFACC). Numerous countries would have to provide diplomatic clearances (DIP clearances). Weather parameters would be met for wind limits for parajumpers and to allow a visual identification of the terrain around the DZ. The follow on airland flow would provide for 1,165 more passengers, 3,060 short tons of cargo and 408 vehicles. Not one sortie was lost for a 100% reliability rate in closing the force. For a recap of the operation the missions were flown over five nights, with 62 missions delivering 2,175 passengers, 3,060 short tons of cargo, 408 vehicles with 100% reliability.

This operation is a good study in employment of the C-17 in closing the force since airland and airdrop was employed in a span of five days. The 173rd Air Borne Brigade required a combat force that could be employed immediately with sufficient force. Joint Publication (JP) 5-00.1 provides insight into the development of the plan for the operation. There were three possible Course of Actions (COA): delivery only by airdrop; delivery by airland; a combination airdrop and airland operation. The JP states for a COA to be valid it has to be suitable, feasible, acceptable, distinguishable, and complete.²⁶ The option of only airdrop would have increased the number of sorties required, due to loss of cargo capability for rigging of airdrop loads. The option of airland would not have secured the airfield immediately for the follow on flow. The most suitable, feasible, acceptable and complete option was the airland and airdrop option.

DECIDING ON AIRDROP OR AIRLAND OPERATIONS

Army FM 4-20.41 provides an excellent matrix to examine airdrop and airland operations and for the commander to choose between airdrop and airland. This manual was validated with the 173rd airdrop and can provide a basis for future planning of airlift forces.

“Airdrop can be used when no other means for transporting supplies or equipment is available.”²⁷ This was a factor on deciding on airdrop or airland for Bashur, there was not a means of building combat forces quickly in Northern Iraq and there was not a means of driving from Turkey, Iran or Syria. Airdrop was employed to secure an airfield and area for follow on airland operations.

“Airdrop permits throughput of supplies from the corps and theater areas, and from the national level directly to the using unit, whether or not the unit is located in an isolated area.”²⁸ Bashur and Northern Iraq was an isolated area. Not only units from Europe were employed, also multiple units from CONUS were employed and joined in the airdrop or following airland operations. “Airdrop reduces in-transit time and handling requirements from the source of supply to the ultimate user.”²⁹ This is true if the material flows from the same theatre and does not require trans-loading to other aircraft.

“Airdrop reduces the need for forward airfields, landing zones (LZs), and materiel handling equipment (MHE), reducing the battlefield footprint.”³⁰ With an airdrop operation, there is not a requirement for an airfield, LZ or MHE. For the Iraq operation, It was decided that airland would be used because “airdrop net payload is reduced because of the relatively heavy weight of the airdrop rigging equipment.”³¹ The average airdrop load was 30,000 pounds but on the follow on airland flow nights, the payload was 102,000 lbs, due to the loading of airdrop platforms versus airland platforms or wheeled cargo loads.

“Airdrop permits greater dispersion of ground tactical forces.”³² This was not planned for the personnel drop, all personnel would be dropped in the same area to secure the airfield for a follow on airland flow. The heavy equipment was dropped in the same area to provide the ground forces the equipment to immediately fight on the ground and to “prevent supplies from falling into enemy hands.”³³

“Airdrop, as opposed to airland, enables a shorter turnaround time for non-landing aircraft, and reduces risks to the aircraft, increasing aircraft availability.”³⁴ This is true for the most part, but during the airland flow two C-17s would land every 15 minutes, so the turnaround time was not as great. There is less risk to an aircraft on the ground, if the airfield would come under attack.

Disadvantages of airdrop include:

"Airdrop leaves aircraft vulnerable to enemy air defense systems."³⁵ Not only does airdrop leave an aircraft vulnerable, but airland leaves aircraft vulnerable during takeoff and landing operations. "Airdrop allows no backhaul capability."³⁶ This is critical for injuries from combat or airdrop operations. On the first night of the Bashur airland operation, the first plane was scheduled to fly to Ramstein AB, Germany with any injuries from the previous day airdrop. "Airdrop creates a need to recover and retrograde airdrop equipment."³⁷ Depending on the threat if the troops are separated from their equipment, they may have to fight to get to their equipment, and the equipment may contain essential battlefield equipment. Also depending on the accuracy of the airdrop, forces can be spread out over the DZ area. With the advent of GPS and the mission computer system, the accuracy has been increased. Some platforms and parachutes can be recovered and used again and requires them to be packaged for movement.

"Airdrop requires specially trained Army rigging personnel and Air Force flight crews."³⁸ Not all C-17 crews are airdrop qualified. Only C-17 airdrop crews are formation qualified, and with the airland flow being flown as a two ship only airdrop crews could fly the airland flow. Crews require a minimum of 12 hours of crew rest, so for this operation, on the first day, there were 30 airdrop crews required as a minimum. The C-17 requires 20 foot static line parachutes versus 15 foot static line parachutes and other specialized equipment for the heavy equipment loads, and not many units in Europe had planned or trained with C-17 aircraft.

"Airdrop with the current available equipment is dependent on favorable wind conditions."³⁹ In combat wind conditions can be waived, but the user would assume greater risk for injuries. Not only is wind a factor, but weather conditions and depending on the terrain and cloud conditions, may restrict the altitude for jumping and identifying the DZ. The C-17 is capable of Instrument Meteorological Conditions, but due to terrain, the altitude could be very high.

"Airdrop operations require an extensive planning effort and much longer cycle times."⁴⁰ Additional coordination is required for suppression of enemy air defenses, ground suppression not only with USAF assets, but also joint and coalition partners. During the drop of the 173rd ABN there was support from USAF, Special Operation Forces, Navy and Marine assets.

Advantages of airland include "equipment that is not air-droppable, such as tanks, some artillery, and helicopters, to be brought rapidly in-theater. Airland permits the maximum utilization of aircraft loads (ACLs) by eliminating the volume and weight of preparing loads for airdrop deliveries."⁴¹

"Airland allows a greater degree of tactical integrity and the capability to rapidly employ units after landing." A commander would know where all of his personnel and equipment is,

since during airdrop the equipment and personnel can be separated by different DZs or inaccurate drops and the risk of damage or injury is less.⁴²

“Airland allows aircraft to be used for backhaul or evacuation of personnel.” In a combat situation a commander would want the ability to move injured personnel from the combat zone, and during an airdrop injuries will occur.

In order to conduct airland operations it requires moderately level, unobstructed LZs or an airfield. The support personnel and MHE must be positioned to receive the personnel and the MHE available to offload the aircraft as they arrive.

“Airland exposes aircraft to prolonged air and ground attack because of the extended time on the ground at forward airfields.”⁴³ The least amount of time on the ground is preferred to prevent attacks on high value assets. Also after extended periods of time, the enemy can determine flight paths and also parking locations on airfields.

“Airland requires more engineer assets to maintain the airfield.”⁴⁴ After a given time period, runways and taxiways fail and require work to maintain the suitability to conduct operations. During a combat operation airfields may have been destroyed and can require extensive renovation to begin or sustain combat operations.

DISCUSSION AND RECOMMENDATIONS

As the United States Military transforms and moves forces to the CONUS from forward overseas basing, only the forces that respond with speed will be effective, and speed of deployment and employment is one part of the speed equation.⁴⁵ Chief of Naval Operations, Admiral Vern Clark stated, “battles of the future will be about speed, agility and precision.”⁴⁶ This is an interesting point that forces that respond with speed can alter or define the initial conditions, and pick the place and order of battle.

This paper provides a means for the planners to evaluate air mobility operations in the decision process for moving forces with speed to pick the place and order of battle. The choice includes airdrop and airland operations. Airdrop operations may be chosen, if available airlift is available, to mass personnel and equipment in a hostile environment and to secure a lodgment or airfield for future airland follow on requirements. This is true if you have access to airspace from surrounding countries and the lodgment is not right across the border or a new front is to be started. Strategic airdrop permits global reach from the United States to any location in the world. An airdrop operation does not require an airfield and reduces the logistic footprint by not requiring the MHE at the DZ. The aircraft exposure to ground based attacks is reduced. The turn around time is reduced without the aircraft landing for follow on missions.

Disadvantages to airdrop include in a hostile environment, an increase in vulnerability to enemy air defense systems. There is not a back haul capability. Specialized C-17 aircrews are required to fly airdrop and formation and the loads require specialized rigging crews. Weather including winds could prevent an airdrop operation.

Advantages for airland operations include equipment that is not air-droppable must be airlanded. Maximum load weights are permitted without a loss of capability due to rigging equipment or rigging requirements. Backhaul of equipment or personnel may occur. There is a reduction of damage to equipment or personnel, and a commander will know where all of his personnel and equipment are located.

Airland does require an airfield of LZ and the airfield must be maintained, and extensive repair may be required for an airfield that suffered combat damage.

The requirement that only airdrop crews can fly in formation is a limitation, and since the airland sorties were flown in formation, this created a scheduling problem of a minimum of 30 airdrop crews to fly the airdrop and then the airland flow the next day. In 1993 (when the C-17 were originally delivered) all C-17 aircrews were formation qualified, but today not all pilots are airdrop qualified. The support required from the JFACC is reduced by flying in a two ship formation, and a recommendation would be to qualify all crews in formation flying.

SKE has not been very reliable in either the C-17 or the earlier C-141, and a follow on system needs to be developed to capitalize on new technology and to have an update and positional awareness of all aircraft operating in the joint airspace.

The insertion of the 173rd Airborne Brigade displayed a classic air mobility operation that capitalized on both airland and airdrop operations. Bashur airfield was seized and the initial force permitted combat operations to be conducted and secured the airfield, so the flow of equipment over the next four nights could occur. In 62 sorties with an exposure period of only 12 hours in Iraq, permitted the force to close. This operation provides insight for future planners on air mobility operations for rapid global mobility.

WORD COUNT=4,606

ENDNOTES

¹ George W. Bush, *National Security Strategy of the United States of America* (Washington, D.C.: The White House, September 2002), 16

² Ibid., 25

³ Ibid., 29

⁴ Ibid., 29-30

⁵ Donald H. Rumsfeld, *Quadrennial Defense Review Report* (Washington, D.C.: The Department of Defense, September 2001) 26

⁶ Ibid., 77

⁷ Richard B. Meyers, *National Military Strategy of the United States of America 2004* (Washington, D.C.: Joint Chief of Staff, 2004) 6

⁸ Ibid., 15

⁹ Ibid., 22

¹⁰ Vice Admiral Arthur K. Cebrowski (USN-Ret), "The Small, The Fast, And The Many", *NetDefense*, 15 January 2004, 10.

¹¹ A. K. Cebrowski, *Military Transformation, A Strategic Approach* (Washington, D.C.: OSD, Fall 2003), 30

¹² Ibid., 30

¹³ Jim Garamone, "Joint/Interagency Cooperation Needed in Terror War By American Forces," Sept. 8, 2004; available from < http://www.defenselink.mil/news/Sep2004/n09082004_2004090808.html >; Internet; accessed 11 September 2004

¹⁴ Department of the Air Force, *The USAF Transformational Flight Plan FY03-07*, (Washington, D.C.: U.S. Department of the Air Force, 2003), 26.

¹⁵ Ibid. 26

¹⁶ Ibid. 26

¹⁷ Congress, House of Representatives, Committee on Armed Services, Subcommittee of Projection of Forces, U.S. Transportation Command's (USTRANSCOM) Airlift and Sealift Program: Hearing before the Subcommittee on Projection of Forces of the Committee of Armed Services, 108th Cong., 17 March 2004, 2.

¹⁸ Ibid. 2

¹⁹ Air Mobility Command, Tanker Airlift Control Center, "Air Mobility Command Support for OPERATION ENDURING FREEDOM and OPERATION IRAQI FREEDOM", September 10, 2004; available from < <http://public.amc.af.mil/Library/library.htm> >; Internet; accessed 24 September 2004.

²⁰ Joint Doctrine, and Joint Tactics, Techniques and Procedures for Air Mobility Operations, Joint Publication 3-17, (Washington DC, 14 August 2002) I-18

²¹ IBID, I-18

²² IBID. I-11

²³ IBID. I-11

²⁴ Army Manual FM 4-20.41, Department of the Army, Aerial Delivery Distribution in the Theatre of Operation, (August 2003, Washington DC), 2-9-2-10

²⁵ IBID, 2-10-2-11

²⁶ Joint Publication 5-00.1, Joint Doctrine for Campaign Planning, Joint Staff, (Washington, D.C., 25 January 2002). III-9

²⁷ Army Manual FM 4-20.41, Department of the Army, Aerial Delivery Distribution in the Theatre of Operation, (August 2003, Washington DC), 2-9-2-11

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⁴⁴ IBID, 2-9-2-11

⁴⁵ A. K. Cebrowski, *Military Transformation, A Strategic Approach* (Washington, D.C.: OSD, Fall 2003), 30

⁴⁶ Jim Garamone, "Joint/Interagency Cooperation Needed in Terror War By American Forces," Sept. 8, 2004; available from < http://www.defenselink.mil/news/Sep2004/n09082004_2004090808.html >; Internet; accessed 11 September 2004

GLOSSARY

CDS-Container Delivery System
CONUS-Continental United States
GMTF-Global Mobility Task Force
HDR-Humanitarian Daily Ration
JFACC-Joint Forces Air Component Commander
MHE-Material Handling Equipment
MTM/D-Million Ton Miles per Day
OEF-Operation Enduring Freedom
OIF-Operation Iraqi Freedom
SKE-Station Keeping Equipment
USAF-United States Air Force

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